A NEW SPECIES OF HAWK MOTH (LEPIDOPTERA: SPHINGIDAE) FROM PAPUA NEW GUINEA

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Abstract

Macroglossum mouldsi sp. nov. is described from Tabubil, Western Province, Papua New Guinea.

Introduction

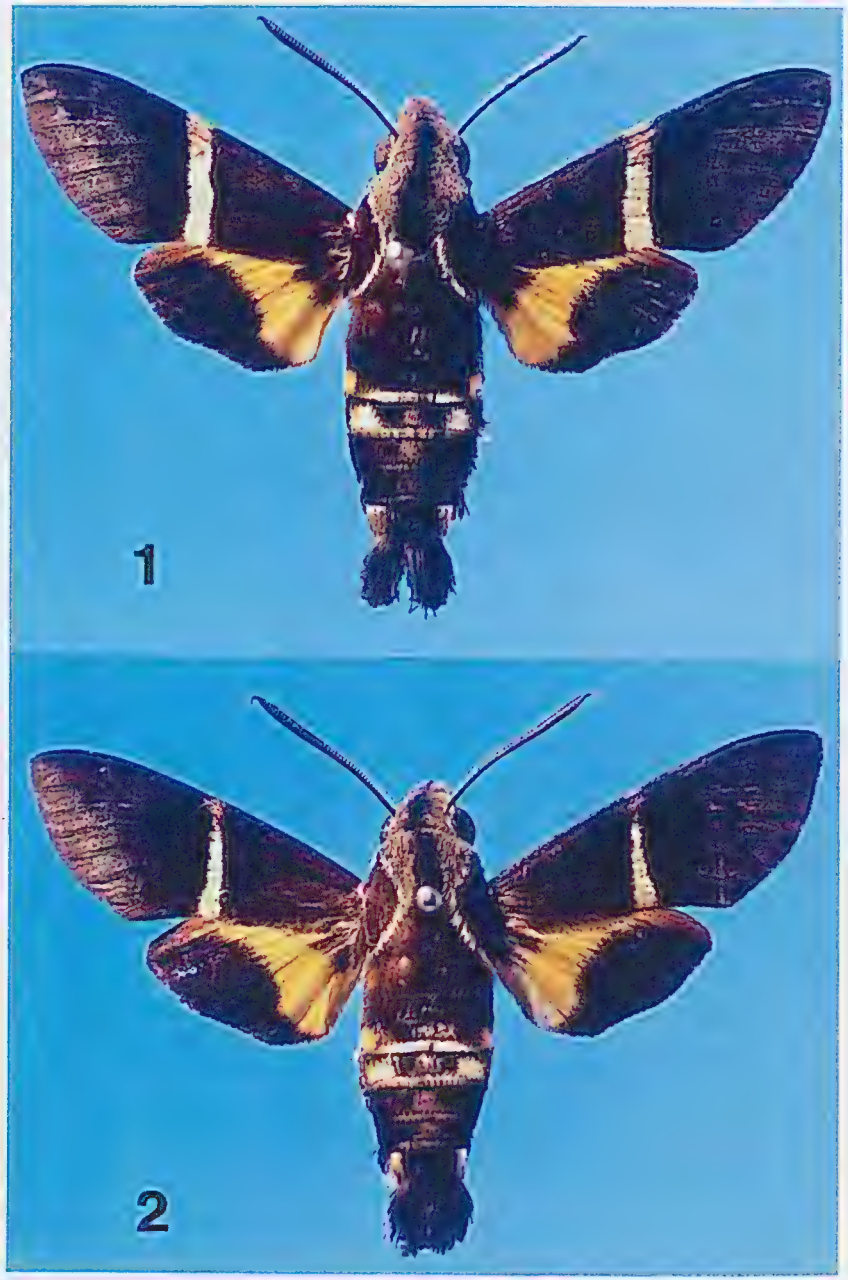
In a recent paper on the hawkmoths of Western Province, Papua New Guinea, Moulds and Lachlan (1998) illustrated a small species of *Macroglossum* Scopoli as *M. albigutta* Rothschild & Jordan, 1903. However, further study has revealed that this taxon represents a previously unknown species, which we describe below.

Macroglossum mouldsi sp. nov.

(Figs 1-6)

Types. Holotype ♂, PAPUA NEW GUINEA: Western Province, Tabubil, 5°15'S 141°13'E, 650 m, 4.ix.1993, R.B. Lachlan. *Paratypes*: 6 ♂♂, same locality, 12.x.1992, 27.x.1992, 19.ix.1993, 3.xi.1993, 4.xi.1993, 30.vi.1991, R.B. Lachlan. Holotype deposited in the Australian National Insect Collection, CSIRO, Canberra; paratypes in the collections of RBL, Dr Max Moulds and The Natural History Museum, London.

Description. Male (Figs 1-3). Forewing length 22 mm. Antennae dark brown; palpi grey-brown dorsally, with a dark brown triangular lateral stripe; head, prothorax and mesothorax with a dark brown median band, laterally grey-brown and with a narrow white line immediately above the eye; tegulae dark brown with narrow white inner edges; abdomen dark brown; segment 3 with lateral yellow patches, between which a narrow white line runs along the posterior margin; segment 4 with white lateral patches, which have some yellow scales along the outer edges; these patches are placed slightly more mesad of the yellow patches on segment 3; segment 4 with a light brown transverse line on the posterior edge between the white patches; small, light brown median patches on segments 4, 5 and 6 give a somewhat worn appearance; segment 7 with small white lateral patches. Underside of palpi and thorax ventrally with a median white patch, bearing scattered light brown scales, that tapers from the palpi to a point midway along abdominal segment 3. Abdomen underside light brown, ventrally irrorated with off-white scales; posterior margins of each segment edged with dark scales and with small, white lateral tufts.



Figs 1-2. *Macroglossum mouldsi*, uppersides. (1) holotype male; (2) paratype male with narrow transverse forewing band.

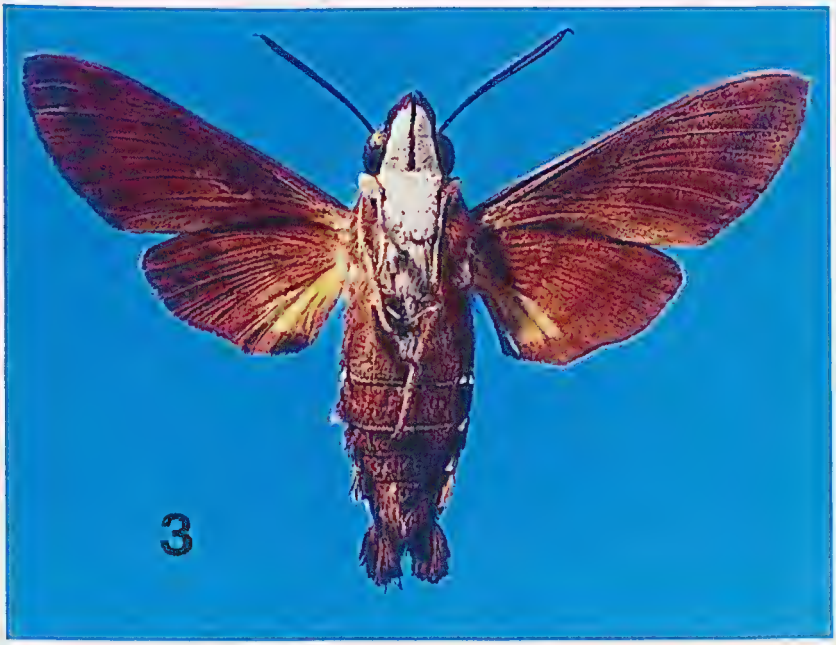


Fig. 3. *Macroglossum mouldsi*, holotype male underside.

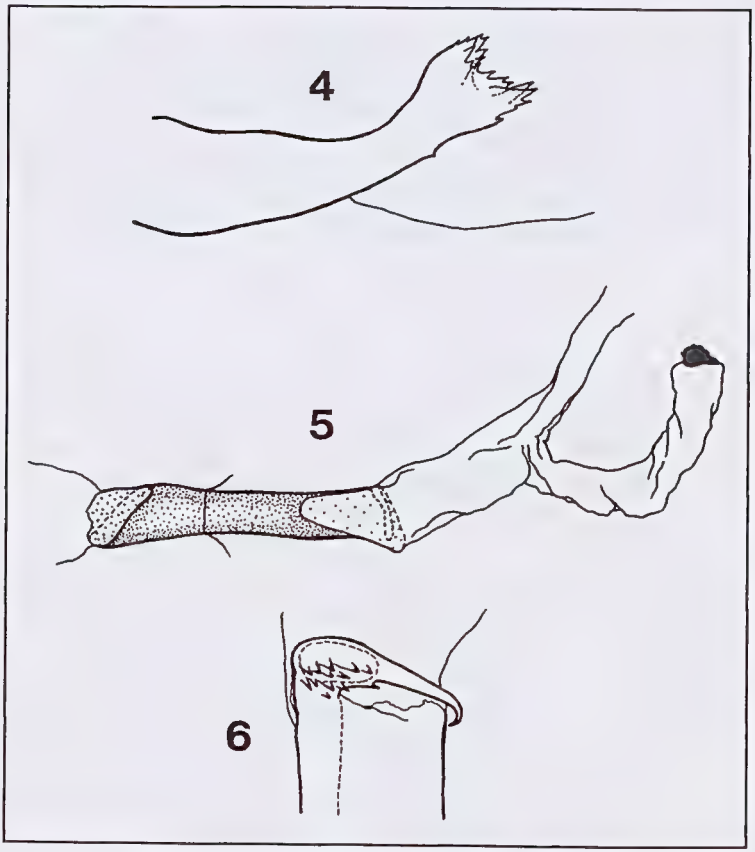
Forewing upperside ground colour uniformly dark brown, distal third slightly paler; transverse white median band prominent, narrow, with sharp anterior and posterior edges; subcostal section with irregular pale brown scaling; pale submarginal band barely indicated; basal two-thirds of forewing overlaid by a loose covering of lighter brown scales in fresh specimens. Hindwing upperside uniformly dark brown, with a broad, uninterrupted yellow median band.

Forewing underside ground colour chestnut brown, the brown apical area delimited along its basal edge by a dark brown irregular line; two thin dark brown lines at apex of discal cell. Hindwing underside ground colour dark chestnut brown; antemedian and postmedian bands indicated by slightly curved dark brown lines; chrome yellow basal area extending from just beyond vein 1A+2A to just below vein but not reaching inner margin or tornus.

Male genitalia (Figs 4-6). Uncus and gnathos well-developed and undivided, forming the pincer-like structure typical of most Macroglossinae; saccus broadly triangular, rounded apically; juxta forms a small, rounded-triangular sclerite ventral to the aedeagus; valva ovate, with 6-8 medially ribbed and apically rounded or slightly truncate stridulatory scales; transtillae formed of two triangular bars, fused medially above the aedeagus; harpe clavate and

bifurcate, armed apically with numerous short, distally directed teeth (Fig. 4). Aedeagus cylindrical;, cuticular simplex about as long as the distal sclerotized part of the aedeagus; transverse apical bar present (Fig. 6); basal swollen part with several small, antero-dorsally directed teeth; left process absent; right process developed into a long, thin spine that curves around the right of the aedeagus to end on the dorsal midline; vesica membranous and gradually tapering, directed postero-dorsally (Fig. 5); a single long, cylindrical diverticulum present, arising ventrally, directed postero-laterally and curving dorsally; apical cornutus on posterior surface not produced as a separate process but armed only with a low, median, slightly serrate ridge.

Female. Unknown.



Figs 4-6. Male genitalia of *Macroglossum mouldsi*; paratype male, sphingid slide #1084 [BMNH]. (4) Right harpe; (5) Aedeagus, lateral view, left side; (6) Apical process of aedeagus, sublateral view, right side.

Variation. The white, transverse band on the forewing is individually variable in its development and can be broad, as in the holotype (Fig. 1), or reduced in width (Fig. 2). Comparable variation is observed among individuals of other *Macroglossum* species with a similar band (Tennent and Kitching 1998). Fresh specimens of *M. mouldsi* have the forewing overlaid by loose light brown scales (present in the holotype but not in the six paratypes). Mell (1922) described specimens of *M. pyrrhosticta* (Butler, 1875), *M. poecilum* Rothschild & Jordan, 1903 and *M. neotroglodytus* Kitching & Cadiou, 2000 [as *M. troglodytus* (Boisduval, 1875)] with such scales as aberration '*ferrea*'. They also occur in *M. caldum philippinense* Clark, 1928, *M. corythus* (Walker, 1856), *M. semifasciata* (Hampson, 1893), *M. variegatum* Rothschild & Jordan, 1903 and *M. vicinum* Jordan, 1923 (I.J. Kitching, pers. obs.) and may be general within the genus. The function of these scales, if any, remains unknown.

Etymology. *Macroglossum mouldsi* is named after Dr Max Moulds (Australian Museum, Sydney), to honour his substantial contributions to Australian entomology, particularly with regard to his work on the family Sphingidae.

Distribution. At present, *M. mouldsi* is known only from the type locality in northwestern Papua New Guinea. However, it is also likely to occur in neighbouring areas of Irian Jaya, Indonesia.

Discussion

Macroglossum mouldsi was first noted and illustrated by Moulds and Lachlan (1998), as *M. albigutta*. However, our examination of the series of *M. a. albigutta* and *M. a. floridense* Rothschild & Jordan, 1903 in The Natural History Museum, London (including those figured by Tennent and Kitching 1998), clearly demonstrated that the specimens from Tabubil, Papua New Guinea are not this species. *M. albigutta* has only been recorded from Bougainville and the Solomon Islands (Tennent and Kitching 1998). Furthermore, the white median line on the underside of the abdomen generally extends to segment 7 in *M. albigutta*, rather than only as far as segment 3 as in *M. mouldsi*. The male genitalia of *M. albigutta* differ markedly from those of *M. mouldsi*. In the former species the harpe is a pointed, ventrally directed hook, while the transverse apical process of the aedeagus is absent (Tennent and Kitching 1998). Furthermore, the cuticular simplex, which is the membrane attached to the anterior end of the aedeagus that houses the part of the retracted inverted vesica in which the spermatophore is held, is extremely long, being over three times the length of the aedeagus. The structure of the diverticulum is similar in the two species, although the position of its origin differs.

Several other *Macroglossum* species have white forewing bands: *M. dohertyi* (Rothschild, 1894), *M. stevensi* Clark, 1935, *M. hirundo* (Boisduval, 1832),

M. rectans Rothschild & Jordan, 1903 and *M. mediovitta* Rothschild & Jordan, 1903. In *M. kitchingi* Cadiou, 1997 and *M. mitchellii* (Boisduval, 1875) the band is pale grey rather than white. *M. stevensi* [figured as *M. mitchellii* by Moulds and Lachlan 1998], *M. hirundo* and *M. rectans* (see D'Abrera 1987) all have more variegated forewings than *M. mouldsi*. *M. dohertyi* differs in having a strong, white subapical line on the forewing (see D'Abrera 1987). In general appearance, *M. mouldsi* is most similar to *M. mediovitta* (see D'Abrera 1987). In both species the ground colour of the forewings is a uniform dark brown, with a slightly paler distal section crossed by the white transverse band. However, *M. mediovitta* is a slightly larger species (forewing length = 24-25 mm), with more pointed forewings (due to a straighter outer margin) and the white band generally suffused with pale brown scales. In addition, the abdomen lacks the dorsal white line along the posterior edge of abdominal segment 3 and the white patches on segment 4. Furthermore, the shape of the harpe of *M. mediovitta* differs from that of *M. mouldsi* in that its apex is irregularly rounded and blade-like (Inoue *et al.* 1996), lacking spines. In fact, an apically bifurcate and spinose harpe is known to occur in only two species of *Macroglossum*, *M. pyrrhosticta* and *M. neotroglodytus*. However, these species are not closely related to *M. mouldsi*; both lack white forewing bands and stridulatory scales on the valvae and have two diverticula on the vesica, each with a cornutus.

Acknowledgments

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